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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/591,670

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EXAMINER

PERSAUD, DEORAM

ART UNIT

PAPER NUMBER

2882

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DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/591,670	Applicant(s) TATSUZAKI, YOSUKE	
	Examiner DEORAM PERSAUD	Art Unit 2882	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 June 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 September 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>09/01/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 2, 4, 6, 8-12, 14 and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Saito et al. (Japan Patent Application Publication 2002-181127 A).

Regarding claims 1 and 11, Saito et al. discloses a pneumatic spring/anti-vibration apparatus (Fig. 2) having a gas chamber (12) filled with a gaseous substance of a predetermined pressure (paragraph [0009] teaches the gas spring filled with gas), comprising a regulating device (14, 15, 16) provided in the gas chamber for regulating a

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temperature change produced according to a volume change of the gas chamber (paragraph [0011]-[0015] teaches the regulating of temperature change).

4. Regarding claims 2 and 12, Saito et al. discloses a pneumatic spring/anti-vibration apparatus, wherein the regulating device is a solid or a liquid (paragraph [0016] teaches wherein the heating means maybe a thermal fluid) exhibiting a greater specific heat or heat transfer rate than the gaseous substance.

5. Regarding claims 4 and 14, Saito et al. discloses a pneumatic spring/anti-vibration apparatus, wherein the regulating device is adapted to make a polytropic index for a dynamic spring constant smaller than a polytropic index of the air (paragraph [0012] teaches the elastic spring coefficient K and heating and cooling of the chamber with air. This is a thermodynamic process where the polytropic process characterizes the compression and expansion of the gas).

6. Regarding claims 6 and 16, Saito et al. discloses a pneumatic spring/anti-vibration apparatus, wherein the regulating device is adapted to allow a volume of the gas chamber to be changed nearly isothermally (paragraph [0013]-[0015] teaches the elastic skin 12a allows for the air in the chamber to change slowly enough to allow the system to continually adjust to the temperature through heat exchange).

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7. Regarding claims 8-10, Saito et al. discloses an anti-vibration/stage/exposure apparatus (Fig. 4) comprising, a support device for supporting a target anti-vibration object with a gaseous substance of a predetermined pressure, and a drive device for driving the target anti-vibration object, and in which a movable body is moved on a surface plate, wherein the surface plate is supported by the anti-vibration apparatus and for use in exposing patterns of a mask held on a mask stage onto a photosensitive substrate held on a substrate stage through a projection optical system, wherein at least one of the mask stage, the projection optical system and the substrate stage is supported by the anti-vibration apparatus (paragraph [0018]-[0020] teaches using the anti-vibration apparatus on a stage to support a substrate in a mechanical apparatus).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 3 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saito et al. in view of Yanagisawa et al. (US Patent Application Publication 2005/0140961 A1).

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Regarding claims 3 and 13, Saito et al. discloses a pneumatic spring/anti-vibration apparatus.

Saito et al. does not teach wherein the regulating device is fiber-shaped steel.

However, Yanagisawa et al. teaches steel wool (metal cotton) can be used inside of a gas spring as a heat accumulating material (paragraph [0068]).

Therefore, it would have been obvious to one of ordinary skill in the art to use the steel wool of Yanagisawa et al. in the pneumatic spring/anti-vibration device of Saito et al. as a heat accumulation material because such a material provides a large surface area while maintaining a small volume (paragraph [0068] of Yanagisawa et al.).

10. Claims 5, 7, 15 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saito et al. in view of Schubert (UK Patent Application 2153042 A).

Regarding claims 5 and 15, Saito et al. discloses a pneumatic spring/anti-vibration apparatus.

Saito et al. does not teach wherein the regulating device includes a gas formed of a mixture of saturated vapor and liquid filled in the gas chamber in a gas liquid mixed phase condition.

However, Schubert teaches an anti-vibration apparatus using a bi-phase fluid where the chamber consists of fluid in both a liquid and vapor state (page 1 lines 17-22).

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Therefore, it would have been obvious to one of ordinary skill in the art to use the bi-phase fluid of Schubert in the pneumatic spring/anti-vibration device of Saito et al. to produce vertical vibration isolation, because such a device are characterized by very low transmissibility and high damping both axially and radially with a relatively inexpensive compact structure (page 1 lines 5-10 of Schubert).

11. Regarding claims 7 and 17, Schubert discloses further comprising a stirring device for stirring the gaseous substance in the gas chamber (page 2 lines 71- 88 teaches where the fluid and vapor are mixed in a mixed phase state, thus implying a device for mixing or stirring).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DEORAM PERSAUD whose telephone number is (571)270-5476. The examiner can normally be reached on M-F (7:30-5) EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Glick can be reached on 571-272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. P./
Examiner, Art Unit 2882

/Edward J Glick/
Supervisory Patent Examiner, Art Unit 2882